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ANALYTICAL REPORT

Prepared by
Lockheed Martin Information Systems and Global Services/Environmental Services
Scientific, Engineering, Response and Analytical Services

Paulsboro Train Derailment
Paulsboro, New Jersey

December 2012

EPA Work Assignment No. SERAS-001
LOCKHEED MARTIN Work Order SER40001
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Submitted to
S. Burchette
EPA-ERT
2890 Woodbridge Avenue
Edison New Jersey 08837

Vinod Kansal 12/10/12
V. Kansal — Date
Analytical Support Leader

12/10/12
D. Killeen — Date
QA/QC Officer

12/10/12
D. Miller — Date
Program Manager

Analysis by:
ERT/SERAS

Prepared by:
J. Soroka

Validated by:
J. Soroka

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TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air, SERAS SOP# 1814, "*Analysis of Volatile Organic Analysis (VOCs) in Air by Gas Chromatography/Mass Spectrometry (GC/MS)*"

ERT/SERAS Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standard, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ERT/SERAS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # 12023 for VOC analysis in air.

Detailed Sample Information

SERAS Sample #	Field Sample #
R212008-01	40001-0001
R212008-02	40001-0002
R212008-03	40001-0003
R212008-04	40001-0004
R212008-05	40001-0005
R212008-06	40001-0006
R212008-07	40001-0007
R212008-08	40001-0008
R212008-09	40001-0009
R212008-10	40001-0011

Introduction

SERAS personnel, in response to WA# SERAS-001, provided analytical support for environmental samples collected from the Paulsboro Train Derailment in Paulsboro, New Jersey as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples analyzed at SERAS were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling and Storage* and SOP #1009, *Operation of Sample Refrigeration Units*.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
02-120812-133648-0001	10	12/8/12	12/8/12	12/8-9/12	Air	VOC/SERAS SOP #1814	ERT/SERAS	X228

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. Data were validated in accordance with the "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" using a Stage 4 Validation done manually (S4VM). All data validation flags have been inserted into the results tables. At the request of the Work Assignment Manager, the laboratory reported results for vinyl chloride.

VOCs in Soil Package X228

The data package was examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.

Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
PQL	Practical Quantitation Limit
PAL	Performance Acceptance Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SERAS	Scientific, Engineering, Response and Analytical Services
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m^3	cubic meter	g	gram	kg	kilogram	L	liter
µg	microgram	µL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	s	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected
J-	Value is estimated low (metals only)	UJ	Not detected and RL is estimated
N	Presumptively present (Aroclors only)		

Rev. 1/14/09

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2890 Woodbridge Avenue, Building 209 Annex
Edison, NJ 08837

Table 1.1a Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

Sample Number	MethodBlank120812-01		P SystemBlank120812-01		40001-0011		40001-0001		40001-0002	
Sample Location	N/A		N/A		School		Jessup		White Swan	
Analyte	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv
Vinyl Chloride	U	0.0300	U	0.0300	U	0.0300	0.549	0.0300	0.0871	0.0300

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

Sample Number	40001-0003		40001-0004		40001-0005		40001-0006		40001-0007	
Sample Location	Library		Church		High School		Mantua		Police Station	
Analyte	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv
Vinyl Chloride	0.382	0.0300	0.930	0.0300	0.149	0.0300	0.155	0.0300	0.220	0.0300

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

Sample Number	40001-0008		40001-0009	
Sample Location	School		Firehouse	
Analyte	Results ppbv	*RL* ppbv	Results ppbv	*RL* ppbv
Vinyl Chloride	0.165	0.0300	0.185	0.0300

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Table 1.1b Result of the Analysis for VOC(µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

Sample Number	MethodBlank120812-01		P SystemBlank120812-01		40001-0011		40001-0001		40001-0002	
Sample Location	N/A		N/A		School		Jessup		White Swan	
Analyte	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3
Vinyl Chloride	U	0.0767	U	0.0767	U	0.0767	1.40	0.0767	0.223	0.0767

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
Table 1.1b (cont) Result of the Analysis for VOC(µg/m3) in Air

Method: SERAS SOP#1814

Sample Number	40001-0003		40001-0004		40001-0005		40001-0006		40001-0007	
Sample Location	Library		Church		High School		Mantua		Police Station	
Analyte	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3
Vinyl Chloride	0.976	0.0767	2.38	0.0767	0.380	0.0767	0.397	0.0767	0.561	0.0767

Table 1.1b (cont) Result of the Analysis for VOC(µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

Sample Number	40001-0008		40001-0009	
Sample Location	School		Firehouse	
Analyte	Results µg/m3	*RL* µg/m3	Results µg/m3	*RL* µg/m3
Vinyl Chloride	0.422	0.0767	0.473	0.0767

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Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Sample ID: LCS 12/08/12

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Vinyl Chloride	1.00	1.02	102	54 - 149

*Indicates out of the criteria

Table 2.2 Results of the Duplicate Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Sample id: 40001-0002

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	0.0871	0.0826	5	≤25

USEPA

DateShipped: 12/8/2012
CarrierName:
AirbillNo:
WO# R212008

CHAIN OF CUSTODY RECORD

Paulsboro Train Derailment/NJ
Contact Name: Colleen Steffensen
Contact Phone: 609-865-6650

No: 2-120812-133648-0001

Cooler #: 1
Lab: ERT/SERAS
Lab Phone: 732-321-4200

SERAS-001-DAR-120912 07

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
01	40001-0001	Jessup	TO-15	Air	12/8/2012	1			
02	40001-0002	White Swan	TO-15	Air	12/8/2012	1			
03	40001-0003	Library	TO-15	Air	12/8/2012	1			
04	40001-0004	Church	TO-15	Air	12/8/2012	1			
05	40001-0005	High School	TO-15	Air	12/8/2012	1			
06	40001-0006	Mantua	TO-15	Air	12/8/2012	1			
07	40001-0007	Police Station	TO-15	Air	12/8/2012	1			
08	40001-0008	School	TO-15	Air	12/8/2012	1			
09	40001-0009	Firehouse	TO-15	Air	12/8/2012	1			
10	40001-0011	School		Blank	12/8/2012	1			

Special Instructions:

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time
Transport to lab	C. Steffensen	12/8/12	[signature]	12/8/12	17:20
to lab	[signature]	12/8/12	[signature]	12/8/12	17:21

Items/Reason	Relinquished By	Date	Received by	Date	Time

07 SERAS-001-DAR-120912